SECOND SERIES. No. 47.

AUGUST, MDCCCLXIX.

THE ZOOLOGIST:

A Monthly Journal

OF

NATURAL HISTORY,

FOR

RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES AND INSECTS.

No. CCCXXXVIII. or S.S. No. 47.

LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

Price ONE SHILLING.

Ke
co
tig
he
the

me
ha
sta
I
th
wh
str
esc
tal

wi
gra
tig
po
ab
tor
pla
the
sc
an
co
as
Du
wa
pe
bu

Two Tiger Stories and one Elephant Story.

By R. THOMPSON, Esq. *

TIGERS REPULSED BY A BULLOCK—TIGERS EATING PORCUPINES.

ABOUT five years ago, when I was pitched at Ramnuggur, on the Kosilla river, I was called up one morning, about two o'clock, by a couple of native ghoteeas, or cow-herds, who had to tell me of a tiger that had broken into their cattle shed that night; of a bullock he had killed, and of his being there crouching behind the carcase of the dead beast up to the time of their leaving for my camp.

The shed was about two miles from my tent: I started with the men at a swinging trot, which brought us up to the place in about half an hour. On being pointed out the shed, there were several standing closely together on a bit of cleared spot in the jungle; I went up to where there was a hole in the side of the grass wall: this was made by the men who were inside along with their cattle when the tiger had entered. On hearing the row which he made in strangling the bullock, they had rushed out, breaking their way through: escape by the doorway was entirely cut off to them, by the tiger taking up his position near it.

When I went up to the hole, putting my head in I was greeted with a savage growl: I then got a torch made of a handful of lighted grass, and, advancing inside, saw the head of a large full-grown male tiger; he was so crouched behind the carcase that a fair shot was impossible. I then looked about, and seeing a 'muchan,' or place raised above the level of the floor to stand milk upon to sour, I gave the torch to a cow-herd, and told him when I gave the signal he was to place it on the floor, put a handful more of grass over it and bolt: the muchan was low enough, but I had considerable difficulty in scrambling clear of the pots, pans and milk-jars. Crouching in amongst these, and lying as closely down as possible, I managed to conceal myself pretty well: I then gave the signal: the cow-herd did as I had told him, and bolted to join his fellows at the other sheds. During the whole of the time occupied in arranging matters, the tiger was keeping up a continuous growling, and more than once I suspected he was going to charge, as he was only forty paces from us; but why he did not I cannot tell, nor can I imagine why he did not

---

* Communicated by Charles Horne, Esq.

BRITISH MUSEUM

escape when we entered with the torch-light : the hole he broke through at was just behind where he was crouching, and nothing but excessive hunger could have caused the beast thus to defy us all. Managing to screen myself, and keeping perfectly still and quiet, and the tiger thinking it all safe, I had the satisfaction of seeing him raise his head, then stand up and make towards the rump of the bullock: his object was evidently to feed, but in this he was singularly disappointed, by a daring charge made at him by a fellow bullock tied not three paces off from the dead one. The tiger growled and retreated as suddenly as the charge had been made : I became interested to see what next: the tiger again got up, and was again repulsed by the heroic little bullock. My torch was in full blaze, and in a few seconds more I knew it would burn out, so I determined to have at the tiger the next time he showed himself: he was not long in giving me the opportunity ; I aimed for his head just behind the ear—he was hit in the exact spot, the ball passing out by the other ear; he dropped, and as suddenly started up, seized the dead bullock by the ribs, and shook it as if it were merely a rat. I fired my second at his shoulder, just behind the knuckle-bone; it was for his heart I designed the bullet this time, and unerringly it performed its mission : the tiger let go his hold on the dead bullock, fell on his back, got up and dashed right into the middle of a lot of buffaloes that were tied at one end of the long shed. The buffaloes started up, broke loose and madly rushed about the apartment; and picture my situation for a moment! The wounded tiger was right in front of me; mad buffaloes all round me; the torch had gone out, and I had nothing for consolation but a pair of empty rifle-barrels! I lay perfectly still, for therein I deemed my safety : at last I heard the death-rattle in the tiger's throat; I felt sure now that he was powerless, and forthwith called out to the herdsmen to come and let the cattle out: this was done, and the dead tiger picked up—he proved to be a male of enormous size.

On skinning my beast, I found that the whole of his fore arms were pricked with porcupine quills, which he could only have got when striking at that animal : some of the quills I found buried in the tarsal bone, others had got fixed in the sinews and fleshy parts of the fore arm; but the tiger had bitten off all the ends nearest the skin. He was evidently in great distress from these, as his emaciated appearance and the festered wounds the quills had caused made evident.

Both tigers and leopards will kill and eat porcupines, especially the leopards, who are very fond of them; and I have as a rule, and not as an exception, found the quills buried deeply in their flesh in a transverse direction.

An opinion prevails with many persons that the quills are swallowed, and eventually work through the system out to the extremities: I cannot but doubt this in the case of larger and thicker quills, which are always carefully removed from the animal before it is eaten. Quills of the size and thickness of hogs' bristles I have invariably found in the tissues of the skins of both tigers and leopards; also hogs' bristles and the stiff hairs of other animals; but never a porcupine quill big enough to cause serious distress to the animal swallowing it. That it is easy enough for a tiger or a leopard, when taking hold of a porcupine, to get a number of the quills into its body by the simple resistance which the latter offers, any one who has seen a living porcupine can easily imagine—from the way it spreads out all its armaments, turning its head away from the front of the enemy, and presenting its bristling posterior, a living *chevaux-de-frize* to receive the brunt of the blow.

A CANNIBAL TIGER.

I used to get frequent 'khubber' of a tiger and tigress on the Bhogpore estate near Nujjeemabad. I went more than once, with a party of others, to look for the quarry, but besides finding numerous fresh tracks on the sandy bed of the Malun river, we never got sight of the game; till one afternoon we, a party numbering four, mounted on a couple of pad elephants, came upon remarkably fresh tracks of both tigers: I got down and tracked, which was easy enough on the sand. After leaving the bed of the river, the animals made their way into thick tree jungle: here I stopped and mounted my elephant; my dogs, some four or five, were amusing themselves by putting up and chasing cheetul and hog-deer. It was during a chase of this sort that I caught sight of the tigress springing out of a bush, and with a single stroke of her paw kill the leading dog on the spot: she stood over the body of poor Rover, smelt his carcase, and walked deliberately away: we followed, and, after a hot chase which lasted over fifteen minutes, the tigress doubled and was lost sight of.

The following evening, the same party being out, we neither saw nor heard of the beasts till late in the evening, when a magnificent roar told us where the royal game could be found. The tigress (she was again foremost and leading) came right upon our view, stalking an extensive plain: hearing our approach she stood, growled, and then gracefully bounded away into a patch of high grass: it was too dark to hunt her out of this.

Our third evening's expedition revealed other members of this interesting family; there were two about one-third grown, and who had up to this kept themselves quite in the background. Monkeys, in their case, betrayed the paternal domains, from the incessant chatterings with which they greeted the appearance of the juvenile tigers whenever they, in the exuberance of animal spirits, came out to gambol on the sands of the Malun. My practised ear caught the well understood chattering, and our party at once drove off to the place. It is needless to go into further details—we found the youngsters, and mortally wounded one: it was getting dark when we found them, and as the wounded fellow had managed to take cover in enormously thick and tall grass, we left him here that evening.

The following morning, proceeding to the spot, we were struck with the appearance of fresh marks of the huge male: these we followed, but, before starting the trail, I arranged a number of men on trees commanding the approaches to all the likely looking pieces of tall grass, determined, now that we had the fresh tracks of the male, and a whole day before us to look for him, to spare no exertions in hunting him down. It was necessary to place men in trees to watch, as, with our two pad elephants, we could neither do the driving to perfection nor see the tiger whenever he moved in the tall grass, which in some bits was nearly on level with our heads; so had to depend on our watcher to give us the direction whenever he moved.

The tracks, after leading to various little glades and salt licks, the usual resorts for deer, returned and entered the patch of tall grass in which we had left the wounded youngster of the previous evening. Having seen the gentleman to his door, and thinking discretion the better part of valour, I mounted my pad: the elephants, on being driven in, began with their short grunts and evident restlessness, plainly to indicate that master tiger was to be found at home. Once down the line—twice beat back again—a third time obliquely with the two first,—but no tiger. Somebody, however, happening to look down into a hole just then, perceived something like the head and feet of a tiger: a halt was immediately called, and examination proceeded with, when—what was it? but the head, two fore feet, one hind leg and tail of the young tiger we had left in that grass the previous evening. I closely examined the ground, collected all the evidence from marks, &c., left by the big male, and the conclusion was that he had forgotten natural consanguinity of relationship, and in a fit of hunger had eaten his own helpless progeny!

From the spot where the beast had feasted on his own young, I steadily tracked him to a patch of tall grass some two hundred yards off, and which I at once knew, from the direction he took, he had made for to get water. This piece we commenced to beat, as before, in line: we had not gone ten yards into it, when my second elephant gave the usual grunt, indicating that she had smelled an unsavory smell. At this juncture I saw the grass wave in front of said elephant slightly, and as if caused by some lithe animal moving cautiously: I kept it in view—we drove on—and, horror! there was such a roar as to cause us all involuntarily to stand still and hold in our breaths, elephants and all. Roar succeeded roar—there was evidently a fight and a deep struggle going on; the grass was being violently moved in a central part of the bit we were beating, and for the first five seconds all was bewilderment with us. The roaring and struggling lasted about a minute, when all became still: we, the sportsmen, looked into each other's faces, and then towards the spot; at last one suggested that the male tiger we were in quest of had bagged a pig, which, disturbed by our line, must have gone near him, and the roaring and struggling was the consequence. This to all of us seemed so natural a hypothesis that we adopted it at once, and forthwith proceeded to hunt for the tiger, which we were now sure of finding. Coming up to the place of the fight we started the identical huge male; but what was that he was carrying in his mouth?—what, why his second youngster! The poor wretch had also taken refuge in the grass; we had put him up on entering the beat; he had glided along, probably unconscious of the vicinity of his unnatural father, had slept upon his lair and was bagged for his temerity. The old cannibal no doubt had the relish of the night's supper fresh in his mind's eye, when he saw young hopeful within his clutches.

I will not prolong the story: suffice it that after heavy beating through grass, which in some places was taller than our elephants, with tact and management, materially assisted by the men whom I had set to watch, and after getting a jolly spill off the elephant when she was charging the tiger, I had the honour of bagging my gentleman with the first shot fired at him from my rifle. He was a full-grown tiger, measuring ten feet with his coat on, and twelve feet six inches when it was taken off and stretched between two men holding either extremity. The young tiger, which was so unnaturally polished off, was picked up quite dead; the throat was frightfully lacerated, and the left shoulder with its scapular bone was entirely crunched to pieces: the little fellow fought well, and left a deep wound on the fore arm of the big male.

I was curious to know whether we could find traces of the young one eaten the night before in the stomach of the old fellow: we had him opened, and the contents of his stomach examined: his having practised cannibalism was beyond all controversy, for there were huge pieces of flesh with skin and hair entire, in a state of semi-decomposition, taken out of it.

I subsequently bagged the tigress, with great difficulty; and thus perished the whole family of tigers of Bhogpore.

FEMALE ELEPHANT CARRYING HER YOUNG.

A large single male tusker that I had been stalking the whole day made off and joined a herd of seven full-grown females and three young ones; one of the latter was, apparently, only a few days old—a little overgrown pig-looking sort of thing. When in the herd the tusker appeared more easy, and I was able to get within shot: I killed him with the first bullet; he dropped dead in the middle of the herd. There was a rush; some of the females even attempted, finding he did not follow, to return and assist him up by pushing at him with their trunks. My brother and a party of five natives were on the opposite side of the valley waiting for the tusker, in the event of his not being killed and going that way. The female herd, finding the tusker did not follow, broke up the valley in the direction of my brother's party: I called out to him to look out as the herd was coming full spell on the top of them. He and his party had just time to leave the well-worn track made by these sagacious creatures throughout the forests when the herd came up: the other females and older young ones, seeing the party before them, swerved and breasted the hill, leaving the old mother elephant and her newly-born progeny to struggle up after. The sagacious creature stood, threw dust and rubbish at a dog which had run up to attack the young 'hathee' (elephant), and then taking the little fellow up by the trunk, she put that organ into her mouth and magnificently strode up the hill after the receding herd, with young hathee dangling like a pendant in the air. It was the most comical, and yet the most astonishing sight we had ever witnessed; and as a fact in the natural history of these animals, I think it stands unique.

The tusks of the male weigh seventy-five pounds, and each is four feet four inches long, and sixteen inches girth round the thickest part: they can be seen now at my house.

R. Thompson.

Forest Lodge, Nynee Tal, July 31, 1867.

Extracts from the Report of the Council of the Zoological Society, read April 29, 1869.

It seems desirable to reprint in the 'Zoologist' those portions of the Zoological Society's Report which have especial reference to the state of the collection, while the statistics of income, expenditure and attendance are of less general interest.

The number of visitors to the Gardens during 1868 has been 573,186, being an increase of 16,972 over last year.

The number of animals living in the Society's Menagerie has not varied greatly since the issue of the last report. The following are the corresponding numbers at the close of the last four years:—Quadrupeds, in 1865, four hundred and ninety; in 1866, five hundred and thirty-five; in 1867, five hundred and thirty-one; in 1868, six hundred and sixteen. Birds, in 1865, one thousand three hundred and sixty-five; in 1866, one thousand three hundred and five; in 1867, one thousand three hundred and twenty; in 1868, one thousand two hundred and twenty. Reptiles, in 1865, one hundred and one; in 1866, one hundred and seventy-three; in 1867, one hundred and fifty-nine; in 1868, one hundred and thirty-four. There have, however, been some very remarkable additions to the collection during the year 1868, as the following list of the principal novelties will show:—

A young caiman from Paraguay, presented by George Wilks, Esq., February 4th. This specimen was determined by Dr. Gray as belonging to his species *Jacare longiscutata*, and was of interest as indicating the true *patria* of this rare species.

A smooth-headed capuchin monkey (*Cebus monachus*, F. Cuv.), remarkable for its large head covered with short recumbent hairs, very different from those of the *Cebi* ordinarily seen in the Society's Menagerie, where this species is believed to have never been exhibited before. The present individual was deposited by Mrs. Pascoe Dupré Grenfell, on the 26th of February.

A thicktailed opossum (*Didelphys crassicaudata*, Desm.), from the Argentine Republic, presented by George Wilks, Esq., March 5th, being a fine example of this rare species.

A burrowing owl (*Pholeoptynx cunicularia*, Mol.) from the same locality, and presented by the same donor. No sooner was this bird placed in its cage than, true to its habits, it evcavated a hole in the soil at the bottom, into which it always retreats when threatened.

A wrinkled hornbill (*Buceros corrugatus*, Temm.) from Borneo, obtained by purchase on the 27th March.

A male example of the Bornean fire-backed pheasant (*Euplocamus nobilis*, Sclater, Proc. Z.S. 1863, p. 119, t. xix), obtained at the same time, and believed to be from the same locality.

A white-billed parrot (*Tanygnathus albirostris*, Wallace, Proc. Z.S. 1862, p. 336) from Celebes.

A male lyre-bird (*Menura superba*), presented by the Hon. John Ellis, April 21st, making up a pair of this extraordinary bird then living in the Society's Gardens.

A specimen of the rare marmozet monkey (*Hapale argentata*, Linn.), purchased of a Liverpool dealer, and stated to have been received from the Amazons.

A pair of the wild ass of the Syrian deserts (*Equus hemippus* of the late Isidore Geoffroy St.-Hilaire), of much interest as rendering the Society's series of the living species of this group complete. This pair of animals was obtained by exchange from the Jardin d'Acclimatation, Paris, on the 2nd of May.

A young male of the regent bird (*Sericulus chrysocephalus*), purchased on May 14th, being the first specimen of this remarkable bird that has reached the Society's Gardens alive. The Society's correspondent, Dr. F. Mueller of Melbourne, had previously forwarded a living example of this bird, which, unfortunately, died in the vessel after it had reached the docks.

An African fruit-bat (*Cynonycteris collaris*), which had been captured at sea off the St. John's river, Natal, March 1st, 1868, and was purchased the 27th of May. This animal is placed in the monkey-house along with the Indian fruit-bat (*Pteropus medius*), which has been living in the Society's Menagerie ever since October, 1863.

A pair of the beautiful green hunting-crow of Northern India

(*Cissa venatoria*), purchased June 2nd, and believed to be the first examples of this form received alive in Europe.

An Australian fruit-bat (*Pteropus poliocephalus*, Temminck), from New South Wales, presented by H.R.H. the Duke of Edinburgh, July 4th.

A young male Koodoo antelope (*Strepsiceros kudu*), purchased July 16th out of a large collection of living animals made by M. Casanova in the vicinity of Casalá, Lower Nubia.

A young female of the Spanish ibex (*Capra pyrenaica*, Schimper), presented by Major Howard Irby, August 10th. Another correspondent of the Society has promised to supply a male of this interesting species.

A very fine young female of the Hoolock gibbon (*Hylobates hoolock*), presented by Mr. A. Grote, F.Z.S., August 14th, who has communicated to the Society the following note respecting this animal.

"This hoolock was sent to me early in 1867, by Mrs. Driver, of Gowalpara, a civil station on the western border of the Assam province. The animal is common in the jungles of the Gowalpara district, on the left bank of the Barhampooter; and its young are frequently captured by the natives and brought into the station, though, being impatient of confinement, they are not usually, so far as I can learn, kept alive for any time. Those which are sent down to Calcutta seem very sensitive to the change of climate, and are generally carried off by pulmonary disease. The individual which I brought home was attacked within a week of her reaching me at Alipore, and would probably have succumbed but for the unremitting attention of Dr. John Anderson, the Society's agent in Calcutta, to whom I had made her over. She was for more than a year in the Botanic Gardens, and, being allowed a good deal of liberty there, kept her health very well. She has grown considerably since she was first sent down to me."

A specimen of the large white crane of Upper India (*Grus leucogeranos*), presented by the Babu Rajendra Mullick, of Calcutta, August 14th.

A young female sea-lion (*Otaria jubata*), from the Falkland Islands, received August 24th.

This individual was the only survivor of eight examples of this animal captured in various spots on the coast of the Falklands by Adolphe Alexandre Lecomte, the Society's keeper, who was sent out there by the Council of the Society for the purpose of obtaining living specimens of it.

A young male African two-horned rhinoceros (*Rhinoceros bicornis*), purchased September 11th. This animal, which is believed to be the first individual of the species which had reached Europe alive since the days of the Romans, was purchased for the Society of Mr. Carl Hagenbeck, the well-known dealer of Hamburgh. It was originally captured on the 12th of February, 1868, by the Arabs of the Beni-Ammer tribe, in the vicinity of Casalá, in Upper Nubia, and was sold by them to Herr Casanova, an enterprising traveller of Vienna. Pending the completion of the new house for rhinoceroses and elephants, now in process of erection, this rhinoceros is temporarily lodged in the giraffe-house.

Two specimens of the dotted-jawed caymen (*Jacare punctulata*), obtained in the Island of Tobago, and presented to the Society by Capt. Spicer, of the ship 'Mary,' on the 18th September.

A Pampas cat (*Felis pajeros*) from La Plata, being a beautifully marked species quite new to the Society's collection.

Two black-billed sheath-bills (*Chionis minor*, Hartl.) from the Crozette Islands, presented by E. L. Layard, Esq., F.Z.S., on the 26th of October.

A fine specimen of the aard-wolf of the Cape of Good Hope (*Proteles Lalandii*), purchased by the Society, October 26th, of Capt. W. R. Dixon, of the Cape Mail Company's service, and believed to be the first example of this rare mammal ever brought to Europe alive.

The sum allowed in the estimates for the ordinary purchases for the Society's Menagerie in 1867 was £2000. The amount actually spent in this manner, together with carriage and keeper's travelling expenses, was £2099 9*s*. 10*d*. Besides this, however, special expenses connected with the increase of the Menagerie, amounting altogether to £632 8*s*. 11*d*., were incurred under the following circumstances:—

The young male sea-lion (*Otaria jubata*) acquired by the Society in 1866, having proved to be an animal of no ordinary interest both to scientific observers and to the public, the Council, as already announced to the Society in their Report of the year 1867, made arrangements to obtain another individual of the same species to replace it. To this end they despatched to the Falkland Islands, in June, 1867, the keeper François Lecomte, with instructions to endeavour to bring home as complete a living collection as possible of the mammals and birds of those islands.

Lecomte left Swansea on the 1st of June, 1867, in the coal-ship 'Epsilon' (Captain Williams), and arrived at Port Stanley on the 11th of August. The first fortnight after his arrival he devoted to excursions along the shores in the vicinity of Port Stanley, but found little of interest here. In the middle of September Lecomte went to Capt. Packe's establishment at Island Harbour, and stayed there a month, searching the creeks and shores diligently in that vicinity. In December Lecomte returned to Port Stanley, where Governor Robinson most kindly gave him a room in Government House whilst engaged in preparing specimens and prosecuting researches for the Society. His Excellency likewise allowed him the use of a schooner of eight tons burden, in which he made several voyages to Volunteer Lagoon and the adjoining shores of East Falkland. This was in the month of December, when the various species of penguins, of which Lecomte made a considerable collection, are most easily captured.

About the beginning of March Lecomte left Port Stanley again in the Governor's schooner for "sea-lion Island," off the south shore of East Falkland, with the expectation here, at least, of meeting with the animal whence the island has received its name. But he was again disappointed, not a single sea-lion having been found in this locality. But on the southernmost of the Kelp Islands, lying further north, which were visited on the return voyage, a herd of about thirty individuals of this animal was discovered; an old male (of which the skull was preserved) was shot, and four young ones (two males and two females) were captured. The female sea-lion produces her young (rarely more than one at a birth) about Christmas-day, so that these animals were probably between three and four months old when captured. Lecomte returned at once to Port Stanley with his captives, but found much difficulty in rearing them. The supply of milk was limited, and small fishes, such as they could eat, were with difficulty to be had. The last of the four died upon Good Friday (April 10th), whereupon he immediately determined to set about getting a fresh supply.

The governor's schooner being now employed upon other service, Lecomte hired for this purpose the schooner 'Felis' (Capt. Hansen), a vessel of about twenty tons, usually engaged in the penguin and seal fishery, and left Port Stanley on May 23rd. At Kelp Island, the first spot visited, they could not land from bad weather, but sea-lions were observed with the glass. On the 30th of May they were on Great Island in Adventure Bay, and here succeeded in capturing the only two sea-lions met with, both of which were young females. On the 8th of June two others (one male and one female) were taken at North Point Island, off the same coast, the female being that which is now in the Society's Gardens, and Lecomte immediately returned with all four of them to Port Stanley.

From Port Stanley Lecomte proceeded home by the packet 'Fawn,' which meets the mail-steamer at Monte Video, with the following living animals:—

Four sea-lions (*Otaria jubata*).
One Gentoo penguin (*Pygosceles Wagleri*).
Four rock-hopper penguins (*Eudyptes nigrivestis*).
Six kelp geese (*Chloëphaga magellanica* and *C. antarctica*).
Nine logger-headed geese (*Micropterus cinereus*).
Eight Johnny rooks (*Milvago australis*).
Seven cormorants (*Phalacrocorax magellanicus* and *P. carunculatus*).
Twelve gulls (*Larus dominicanus*, *L. Scoresbii*, &c.)
Six starlings (*Sturnella militaris*).
Twenty-two finches (*Phrygilus melanoderus*).
Two sea-hens (*Hæmatopus niger*).
Two foxes (*Canis antarcticus*).

But the weather was very unfavourable between Port Stanley and Monte Video, and seventy-one of the animals died *en route*. For some time longer the four sea-lions remained in good health and condition, but a passenger having died of yellow fever, the stock of fish shipped for feeding them was condemned on account of its smell, and ordered to be thrown overboard. The consequence was the loss of three out of the four sea-lions—the survivor having been kept alive as far as Lisbon, where a fresh supply was obtained, mainly by the flying-fishes (*Exoceti*), which fell on the deck at night and were purchased from the sailors who picked them up.

Besides the sea-lion, Lecomte succeeded in bringing to the Gardens only the following animals:—

One antarctic wolf (*Canis antarcticus*).
Two Forster's milvago (*Milvago leucurus*).
One kelp goose (*Chloëphaga antarctica*).
Two upland geese (*Chloëphaga magellanica*).
One Dominican gull (*Larus dominicanus*)

The cost incurred upon this expedition was considerable, having amounted in 1868 altogether to £507 8*s*. 11*d*., besides £50 devoted to the same object in 1867, and it cannot be said that the value of the animals obtained equalled the expenditure. At the same time the expedition cannot be said to have turned out altogether a failure, since a specimen of the much-wished-for sea-lion was successfully brought home, and is still thriving in the Society's Menagerie. It is also right to state that the Council have every reason to be satisfied with Lecomte's conduct during this difficult and dangerous expedition, although the results obtained were not altogether so satisfactory as could have been wished.

A second item of special expenditure was likewise incurred by the Council last year in connexion with the Abyssinian Expedition. It appearing that the government had made no arrangement to attach to the exhibition any competent observer in the important branch of science to the promotion of which this Society is devoted, the Council were induced to address a memorial to the Secretary of State for India upon the subject. They were so far successful in their efforts as to induce the government to agree to pay the necessary expenses of a zoological collector, leaving the appointment in the hands of the Council. The Council had at first selected for this post an officer of the Indian Army, already well-known for his investigations into the Natural History of that country. This gentleman having been unfortunately incapacitated from joining the expedition by a serious attack of illness, the Council nominated in his place Mr. William Jesse, who had had considerable experience in zoological collecting in South America. Although much delay was caused by this change, Mr. Jesse managed to reach Abyssinia in February, 1868, and after the termination of the expedition made a journey into the Bogos country, whence he finally returned to England in August last.

Mr. Jesse's collections, as will be seen by his Report, which will be printed in the Society's 'Proceedings,' embrace about 1250 zoological specimens. The largest series obtained was that of the class of birds, in working out which the Society have obtained the services of Dr. O. Finsch, of Bremen, one of the best living authorities on African Ornithology. Dr. Finsch's completed memoir upon the birds collected by Mr. Jesse has lately been received, and will be read at one of the approaching Scientific meetings.

In anticipation of Mr. Jesse being likely to acquire some valuable living specimens for the Menagerie, the Council placed the sum of

£100 at his disposition for this purpose; but circumstances did not allow Mr. Jesse to make any material additions to the Society's collection.

These two items, added to the sum of £25 spent by Mr. R. Swinhoe upon the acquisition of Chinese animals under the circumstances mentioned in a previous Report, make up the previously mentioned total extraordinary expenditure of £632 8*s.* 11*d.* devoted to special acquisitions for the Society's Menagerie.

A list of animals which have been bred in the Gardens of the Zoological Society between the 1st of January, 1868, and the 1st of January, 1869:—

MAMMALS.

A Macaque monkey (*Macacus cynomolgus*).

A Rhesus monkey (*Macacus erythræus*).

Five common wolves (*Canis Lupus*).

Five North-African jackals (*Canis anthus*).

Two spotted hyænas (*Hyæna crocuta*).

Three Indian leopards (*Felis leopardus*).

An ocelot (*Felis pardalis*).

Two raccoons (*Procyon lotor*).

A ringed seal (*Phoca fœtida*).

A Cuming's octodon (*Octodon Cumingii*).

An Indian porcupine (*Hystrix leucura*).

Eight Fonrnier's capromys (*Capromys pilorides*).

A viscacha (*Lagostomus trichodactylus*).

A mouflon (*Ovis Musimon*).

An aoudad (*Ovis tragelaphus*).

A markhoor (*Capra megaceros*).

Three Cashmere-shawl goats (*Capra Hircus*).

Two hybrid goats (between *C. megaceros*, male, and *C. Œgagrus*, female).

Two elands (*Oreas Canna*).

A Nylghaie (*Portax picta*).

A hybrid gayal (between *Bos indicus*, male, and *Bos frontalis*, female.

A Persian deer (*Cervus Maral*).

A Formosan deer (*Cervus taivanus*).

Two Japanese deer (*Cervus Sika*).

A Sambur deer (*Cervus Aristotelis*).
A Mexican deer (*Cervus mexicanus*).
Two vulpine phalangers (*Phalangista vulpina*).
A short-headed phalanger (*Belideus breviceps*).
A red kangaroo (*Macropus rufus*).
A black-faced kangaroo (*Macropus melanops*).
A great kangaroo (*Macropus giganteus*).
Two yellow-footed rock kangaroo (*Petrogale xanthopus*).
A Bennett's wallaby (*Halmaturus Bennettii*).
Four Gray's Jerboa kangaroo (*Bettongia Grayi*).

BIRDS.

Two Talpacoti ground doves (*Chamæpelia talpacoti*).
A Maugé's dove (*Geopelia Maugæi*).
Five barred-shouldered ground doves (*Geopelia humeralis*).
Six bronze-winged pigeons (*Phaps chalcoptera*).
Two Nicobar pigeons (*Calœnas nicobarica*).
Eighteen Pallas's eared pheasants (*Crossoptilon auritum*).
Twenty-six Japanese pheasants (*Phasianus versicolor*).
Four Sœmmering's pheasants (*Phasianus Sœmmeringii*).
Twenty-two Reeves's pheasants (*Phasianus Reevesii*).
Fourteen cheer pheasants (*Phasianus Wallichii*).
Ten Swinhoe's pheasants (*Euplocamus Swinhoii*).
Five purple kaleege (*Euplocamus Horsfieldii*).
Six black-backed kaleege (*Euplocamus melanotus*).

Seven hybrid lineated Pheasants (between *Euplocamus Cuvieri*, male, and *E. lineatus*, female).

Eight Sonnerat's jungle fowls (*Gallus Sonneratii*).
A peacock pheasant (*Polyplectron chinquis*).

Twenty hybrid turkeys (between *Meleagris Gallopavo*, male, and *M. ocellata*, female).

Nine rufous tinamous (*Rynchotus rufescens*).
Three sun-bitterns (*Eurypyga helias*).
One hybrid ibis (between *Ibis alba* and *I. rubra*).
Four upland geese (*Cloephaga magellanica*).
An ashy-headed goose (*Cloephaga poliocephala*).
Five ruddy-headed geese (*Cloephaga rubidiceps*).
Five Egyptian geese (*Chenalopex ægyptiaca*).
Two black-necked swans (*Cygnus nigricollis*).
Seven ruddy sheldrake (*Tadorna rutila*).

Three mandarin ducks (*Aix galericulata*).
Five Bahama ducks (*Pœcilonetta bahamensis*).
A yellow-billed duck (*Anas xanthorynchia*).
Two glaucous gulls (*Larus glaucus*).

The Death of Species. By EDWARD NEWMAN.

(Continued from Zool. S. S. 1542.)

MIGRATION.

IN this age of unfixity and unrest, when nothing seems settled unless it be the desire to unsettle; when faith in the old is shaken to its foundation; when yearning for the new distracts our attention from the true; when we are required to renounce the most authentic records of facts, to abandon the most cherished conviction of years, and to accept crude hypotheses, which are neither clear to the minds of the propounders nor intelligible to the minds of the learners; when Science itself, following in the wake of so-called Theology, exhibits every symptom of confirmed insanity; it is refreshing to find a large class of facts still carrying their irresistible logic through all opposition. I mean the patent facts of migration. We all believe in them; we all admit their existence, although very few of us have any very precise idea of their cause, their effect, their variation, or their extent. It may be convenient to state *in limine* that there are two great phases of migration—the first, that of the swallow, which has an ascertained periodicity, and is double, having its ebb and flow as certain as the tide;

"Euns rediensque gaudet."

The second, which is single, is an EXODUS that meditates no return, and is exemplified by the locust, the sugar ant, the lemming, the Israelite and the Teuton. There is no reasonable doubt that both these phenomena tend to prolong the existence of a *species*, postponing indefinitely its ultimate death, but, paradoxical as it may appear, resulting in death to millions of individuals. The two phases are so mixed and involved that no classification of them could be otherwise than hypothetical, and will therefore not be attempted by me. I shall dwell for a while on that particular phase which serves especially to illustrate my views, and which I have denominated an "exodus."

There is an apparent recklessness in the commencement of an exodus, and an uncertainty of result in carrying it out, that have hitherto baffled all calculation. Certain beings appear where they were previously unknown, and often appear as it seems only to die: they devour our substance, and leave us their dead bodies. The effects are patent. The causes are hermetically sealed in a book we cannot open. Such phenomena have attracted the notice of mankind in all ages; but, search as we may, we find no explanation that tends to advance our knowledge or satisfy our longing for further information. The most profound thinkers have done little more than supply us with a *formula* of words by which to evade explanation. Thus Burke, writing of our own migrations,—the migrations of man,—informs us that "These movements of bodies of men are carried out by a sort of migrative instinct." Kingsley alludes to the phenomenon as the result of "restlessness, not nomadic but migratory, arising not from carelessness of land and home, but from a longing to find a home in a new land"; and, with regard to the Teuton in olden,—aye, even in pre-historic times,—he inquires whether "there is anything wonderful in the belief that the spirit of Woden, 'the mover,' may have moved them and forced them to go ahead as now." Latham, whose reflective power was quite as great as that of the illustrious authors I have mentioned, and whose acquaintance with philology and ethnology is infinitely greater, contents himself with the simple admission that "the southward migration of the Teutons between the days of Tacitus and those of Charlemagne, was of unparalleled magnitude and rapidity." The reader will scarcely fail to observe that these phrases amount to little more than an admission of inability to account for a phenomenon the existence of which admits of no question.

This "restlessness" is by no means confined to a species, order or class: we trace its existence in the world of Insects, Fishes, Reptiles, Birds, Quadrupeds and Men. A few years only have elapsed since I recorded in the 'Entomologist' the appearance of an aphis-destroying fly on our southern coast: this was Syrphus Pyrastri, an insect of great beauty and considerable size; examples were sent me in bottles, boxes, and envelopes, and were denominated "horse-stingers," wasps, bees, musquitoes and locusts, and the accounts of the manner of their appearance were equally diverse; the following facts, however, remained after the narratives had been sifted with the utmost care: the swarm came from the land, not from the sea: it was so numerous as to have the appearance of a thick mist for hours continuously: the term "countless myriads" is far too vague to give any adequate idea of number: the individuals composing the mist fell in a slanting direction into the sea, and so died: the dead bodies were returned by the tide, and formed a belt on the sea-shore many miles in extent: the Isle of Wight, Hampshire and Dorsetshire were particularly mentioned as localities: the dead bodies might have been collected by cart-loads. I wish to invite particular attention to this case; because I know of no record of the species having been known to swarm or migrate either before or since; and also because the insect is a very conspicuous one, and could not have escaped notice had such been the case; and again because the several species mentioned in the subjoined extract from Kirby and Spence, come exactly under the same category; the extract is rather a long one, but it is so exactly to my purpose, and is accompanied by reflections so valuable, that I feel I need make no apology for quoting it entire. The authors describe the swarms of Aphides or plant-lice, which often annoy us by their multitudes, covering our clothes and getting into our eyes, noses, mouths and ears: but when we reflect on the marvellous natural history of the Aphis, which only acquires wings once in several generations, we cannot consider the fact of its using those wings when acquired for the purpose of transport to other localities as abnormal. In fact, I regard these migrations as an ascertained feature in the life-history of Aphides, and one that at present knows no exception. Kirby and Spence, after giving instances of such swarms, proceed thus:—

"As the locust-eating thrush accompanies the locusts, so the lady-birds seem to pursue the Aphides; for I know no other reason to assign for the vast number that are sometimes, especially in the autumn, to be met with on the sea-coast or the banks of large rivers. Many years ago, those of the Humber were so thickly strewed with the common lady-bird, that it was difficult to avoid treading on them. Some years afterward I noticed a mixture of species, collected in vast numbers on the sand-hills on the sea-shore, at the north-west extremity of Norfolk. My friend, the Rev. Peter Lathbury, made long since a similar observation at Orford, on the Suffolk coast; and about five or six years ago they covered the cliffs, as I have before remarked, of all the watering places on the Kentish and Sussex coasts, to the no small alarm of the superstitious, who thought them forerunners of some direful evil. These last probably emigrated with the Aphides from the hop-grounds. Whether the latter and their devourers cross the sea has not been ascertained: that the Coccinellæ attempt it is evident from their alighting upon ships at sea, as I have witnessed myself. This appears clearly to have been the case with another emigrating insect, the sawfly of the turnip (Athalia Spinarum). It is the general opinion in Norfolk, Mr. Marshall informs us, that these insects come from over the sea. A farmer declared he saw them arrive in clouds so as to darken the air; the fishermen asserted that they had repeatedly seen flights of them pass over their heads when they were at a distance from land; and on the beach and cliffs they were in such quantities, that they might have been taken up by shovels full. Three miles inland they were described as resembling swarms of bees. This was in August, 1782. Unentomological observers, such as farmers and fishermen, might easily mistake one kind of insect for another; but supposing them correct, the swarms in question might perhaps have passed from Lincolnshire to Norfolk. Meinecken tells us, that he once saw in a village in Anhalt, on a clear day, about four in the afternoon, such a cloud of dragon-flies as almost concealed the sun, and not a little alarmed the villagers, under the idea that they were locusts; several instances are given by Rœsel of similar clouds of these insects having been seen in Silesia and other districts; and Mr. Woolnough, of Hollesley, in Suffolk, a most attentive observer of nature, once witnessed such an army of the smaller dragon-flies flying inland from the sea, as to cast a slight shadow over a field of four acres as they passed. Professor Walch states, that one night about eleven o'clock, sitting in his study, his attention was attracted by what seemed the pelting of hail against his window, which surprising him by its long continuance he opened the window, and found the noise was occasioned by a flight of the froth frog-hopper, which entered the room in such numbers as to cover the table. From this circumstance and this continuance of the pelting which lasted at least half an hour, an idea may be formed of the vast host of this insect passing over: it passed from east to west; and as his window faced the south, they only glanced against it obliquely. He afterwards witnessed, in August, a similar emigration of myriads of a kind of ground-beetle [*Amara*]. Another writer in the same work, H. Kapp, observed on a calm sunny day a prodigious flight of the noxious cabbage butterfly [*Pieris Brassicæ*], which passed from north-east to south-west, and lasted two hours. Kalm saw these last insects midway in the British Channel. Lindley, a writer in the 'Royal Military Chronicle,' tells us that in Brazil, in the beginning of

March, 1803, for many days successively there was an immense flight of white and yellow butterflies, probably of the same tribe as the cabbage butterfly. They were observed never to settle but proceeded in a direction from north-west to south-east. No buildings seemed to stop them from steadily pursuing their course; which being to the ocean, at only a small distance, they must consequently perish. It is remarked that at this time no other kind of butterfly was to be seen, though the country usually abounds in such a variety. Major Moor, while stationed at Bombay, as he was playing at chess one evening with a friend in Old Woman's Island, near that place, witnessed an immense flight of plant-bugs, which were going westward: they were so numerous as to cover every thing in the apartment in which he was sitting. When staying at Aldeburgh, on the eastern coast, I have, at certain times, seen innumerable insects upon the beach close to the waves, and apparently washed up by them; though wetted, they were quite alive. It is remarkable, that of the emigrating insects here enumerated, the majority — for instance the lady-birds, sawflies, dragonflies, ground-beetles, frog-hoppers, &c.—are not usually social insects, but seem to emigrate, like swallows, merely for the purpose of emigration. What incites them to this is one of those mysteries of nature which at present we cannot penetrate."—*Kirby and Spence*, vol. ii. p. 9.

Of the LOCUST, usually termed migratory, volumes might be written, and indeed have been written. The migratory locust, like other insects just enumerated, is not essentially a social insect: it is not influenced by those domestic propensities which induce bees, wasps, ants or Termites to associate; and yet how far beyond calculation are their numbers that congregate. The records, beginning fifteen centuries before the Christian era, and continuing up to the present time, are so accordant that one might serve for all. Omitting the plague of locusts which visited Egypt before the Exodus of the Israelites, and which stands on inspired authority, we shall find that profane history treats in the clearest and most unmistakable language of similar plagues in the years of our era, 591, 1478, 1650, 1748, 1778 to 1780 (in this instance extending over rather more than two years), 1784, 1797, 1799 and 1811. As a matter of course the earlier records are at longer intervals than the later ones; but it does not follow that the phenomena were less frequent. The records of 1811 are perhaps the most complete of all, and the phenomenon seems to have been universally associated with the comet which appeared in the same year, and with the conviction that the locusts fell from the clouds. The last-named solution of difficulties in physical science has been found perfectly satisfactory, and therefore comforting, in many other cases of difficulty, such for instance as nodules of iron pyrites, belemnites, magnetic iron, plant-lice, fishes, frogs, toads, quails, lemmings and very many other objects that pertinaciously decline obedience to human arrangements for their well-being: and when a sceptic hesitates for a moment to accept this solution, he is at once met by inquiry, "Well, where could they come from? I am certain there were no thunder-bolts (or frogs or toads as the case may be) in that field before."

I have said the accounts of locusts are accordant: they are mostly on this wise: the army is observed advancing like a cloud from the east; like a cloud also it disburthens itself of its load as it advances; a living load: the land is inundated with a devouring multitude; the locusts eat and pass onward, leaving no green thing on the face of the earth: onward they travel, stopping only to eat; onward, still onward, the main army passes on until it reaches the sea and perishes in its waters: even then there is no end of the apparent evil: the sea rejects their dead bodies which putrify on the shore, generating such fevers and plagues as have swept away hundreds of thousands of human beings. A few brief extracts may illustrate this: hundreds of similar ones might be made.

"The eggs [of the locusts] were no sooner hatched than each brood collected itself into a compact body of a furlong or more in square, and marching directly forward towards the sea they let nothing escape them; they kept their ranks like men of war; climbing over as they advanced, every tree or wall that was in their way; nay, they entered into our very houses and bed-chambers like so many thieves." —*Shaw.*

"Shortly after sunrise the whole body [of locusts] begins to move forwards in one direction, and with little deviation * * * they uniformly travel toward a certain region. In this manner they advance from morning till evening without halting, frequently at the rate of a hundred fathoms and upwards in the course of a day. Although they prefer marching along high roads, foot paths, or open tracts, yet when their progress is opposed by bushes, hedges or ditches, they penetrate through them."—*Pallas.*

"In the year 591 a swarm of locusts traversed Italy from east to west, and arriving on the sea-coast were drowned in such numbers that the stench arising from their putrefying carcases caused a pestilence that is calculated to have carried off a million of human beings and cattle."—*Mouffet.*

"In 1478 a migratory swarm visited Venetia, devouring every blade of grass and every green leaf, starving the cattle, and causing a famine of which thirty thousand human beings perished."—*Id.*

"In 1650 a swarm of locusts traversed Russia in three columns: they passed principally into Poland and Lithuania, where the air was darkened by their numbers; they moved directly onwards devouring corn both blade and ear, vines, pulse, willows and hemp: death at last overtook them, and then their dead bodies were heaped on one another to the depth of four feet."—*Bingley.*

"In 1748 a swarm [of locusts] entered Europe by Transylvania, flying just above the surface of the ground; they totally intercepted the sun's rays, and rendered it so intensely dark, that one person could not see another at a distance of twenty paces."—*Philosophical Transactions,* vol, xlvi., p. 30.

THE SUGAR-CANE ANT (*Formica saccharivora*).—Towards the end of the last century, but I am unable to give the year from some little confusion of dates, this apparently unknown, certainly unnoticed ant, appeared in the West Indian Island of Granada: it was said to have been imported, but from whence has not even been surmised (See 'Philosophical Transactions,' vol. xxx., p. 346) From Kirby and Spence's Introduction of Entomology I make the following extract:—"The insect appeared in such infinite hosts as to put a stop to the cultivation of the sugar-cane, and a reward of £20,000 was offered to any one who should discover an effectual mode of destroying them. Their numbers were incredible. They descended the hills like torrents, and the plantations, as well as every path and road for miles, were filled with them. Many domestic quadrupeds perished in consequence of the plague. Rats, mice, and reptiles of every kind became an easy prey to them: and even the birds, which they attacked whenever they alighted on the ground in search of food, were so harassed as to be at length unable to resist them. Streams of water opposed only a temporary obstacle to their progress, the foremost rushing blindly on to certain death, and fresh armies instantly following, till a bank was formed of the carcases of those that were drowned sufficient to dam-up the waters, and allow the main body to pass over in safety below. Even the all-devouring element of fire was tried in vain: when lighted to arrest their route, they rushed into the blaze in such myriads of millions as to extinguish it. Those that thus patriotically devoted themselves to certain death for the common good, were but as the pioneers or advanced guard of a countless army, which by their self-sacrifice was enabled to pass unimpeded and unhurt."

The migrative movements of reptiles and fishes appear generally connected with the duty of reproduction which all animals have to perform, and is therefore so far periodical; but there are deviations from this rule although not so decidedly marked, clearly ascertained or thoroughly authenticated, as to take rank with cognate phenomena in insects. Still there is vast importance in the migrations of fishes, bringing as they do food to our very doors, and drawing with them in the migrative current other creatures not impelled by the same instinct of procreation. The same may be said of the migration of frogs and toads, which have so excruciated the minds of thinkers, and have compelled the non-thinking masses to take repose in the cloud hypothesis and religiously to believe that, like meteoric iron, they fell in showers. Proceeding to birds I find abundant evidence of the phenomenon in question: I select three examples.

THE PASSENGER PIGEON.—This bird is called "Columba *migratoria*" from its extraordinary migrations, which seem to have achieved a world-wide notoriety. Wilson, the greatest biographer of the birds of the United States, attempts a kind of solution to this phenomenon, which he attributes to a want of food; but his theory does not appear satisfactory, inasmuch as it is unaccompanied by any statistics whatever, or any kind of evidence that the movement has its origin in the scarcity of food in any particular district; indeed, the very converse of this is the truth, for on some of these occasions the pigeons appear to leave a land which might be figuratively described as "flowing with milk and honey," and to take up their temporary residence where starvation and destruction stare them in the face. Then, again, if this were simply a raid in quest of food, it seems as though the movement must defeat its object by multiplying the consumers without increasing the supply. Be this as it may, it is certain there is no ascertained periodicity, or, so far as human sagacity can penetrate, no rationality in the migrations; they occur at no particular season, at no fixed intervals; they neither precede nor follow periods of scarcity or years of plenty, and as yet no clew whatever has yet been found to their recurrence. With this introduction, I will give Wilson's narrative exactly as it stands.

"The most important feature in the natural history of these birds is their migration. These migrations are caused by the necessity of providing for food, and, consequently, they do not take place at any fixed period or season of the year; indeed, it happens sometimes that an abundant supply of food in one district will keep these birds absent from another for years. The multitudes of these birds almost pass belief. In the autumn of 1813 Audubon left his home at Henderson, on the banks of the Ohio, on his way to Louisville: having met the pigeons flying from N.E. to S.W. in greater numbers than usual, he felt an inclination to enumerate the flocks that would pass within the reach of the eye in the course of one hour. He dismounted, and seating himself on a small eminence, began to mark in his pocket-book a dot for every flock which passed: finding, however, that this was scarcely possible, and feeling unable to record the flocks as they constantly increased, he rose, and counting the dots he had already put down, found that 163 had been made in one minute. He travelled on, and still met more the farther he went. The air was literally filled with pigeons; the light of noon-day became dim, as during an eclipse. Whilst waiting for dinner at the 'Sun,' Audubon saw at his leisure immense legions still going by, and he says, 'But I cannot describe to you the extreme beauty of their aërial evolutions, when a hawk chanced to press upon the rear of a flock. At once like a torrent, and with a noise like thunder, they rushed into a compact mass, pressing upon each other towards the centre. In these almost solid masses they darted forward in undulating and angular lines, descended and swept close over the earth with inconceivable velocity, mounted perpendicularly, so as to resemble a vast column, and when high were seen wheeling and twisting within their continued lines, which then resembled the coils of a gigantic serpent.' Before sunset Audubon reached Louisville, distant from Hardensburgh fifty-five miles; the pigeons were still passing in undiminished numbers, and continued to do so for three days in succession.

"Audubon attempts to reckon the number of pigeons in one of these flocks, and the daily quantity of food consumed by it. He takes, as an example, a column of one mile in breadth, and supposes it passing over us without interruption for three hours, at the rate of one mile per minute: this will give us a parallelogram of 180 miles by 1, averaging 180 square miles; and allowing two pigeons to the square yard, we have one billion one hundred and fifteen millions, one hundred and thirty-six thousand pigeons in one flock; and, as every pigeon consumes fully half-a-pint per day, the quantity required to feed such a flock must be eight millions seven hundred and twelve thousand bushels per day. Audubon thus describes the appearance of the pigeons at one of their roosting places: 'The sun was lost to our view, yet not a pigeon had arrived; but suddenly there burst forth a general cry of, *Here they come!* The noise they made, though yet distant, reminded me of a hard gale at sea passing through the rigging of a close-reefed vessel. As the birds arrived, and passed over me, I felt a current of air that surprised me: thousands were soon knocked down by the men provided with poles. The current of birds, however, kept still increasing; the fires were lighted, and a most magnificent, as well as a wonderful and terrifying, sight presented itself. The pigeons, coming in by thousands, alighted everywhere, one above another, until solid masses of them resembling hanging swarms of bees, as large as hogsheads, were formed on every tree in all directions. Here and there the perches gave way under the weight with a crash, and, falling to the ground, destroyed hundreds of the birds beneath, forcing down the dense groups with which every stick was loaded. It was a scene of uproar and confusion; I found it quite useless to speak, or even to shout, to those persons nearest me. The reports, even of the nearest guns, were seldom heard; and I knew only of the firing by seeing the shooter reloading. No person dared venture within the line of devastation: the hogs had been penned up in due time, the picking up of the dead and wounded being left for the next morning's employment. Still the pigeons were constantly coming; and it was past midnight before I perceived a decrease in the number of those that arrived: the uproar continued, however, the whole night; and, as I was anxious to know what distance the sound reached, I sent off a man accustomed to perambulate the forest, who, returning two hours afterwards, informed me he had heard it distinctly when three miles from the spot. Towards the approach of day, the noise rather subsided, but long ere objects were at all distingishable the pigeons began to move off in a direction quite different from that in which they had arrived the evening before; and at sunrise all that were able to fly had disappeared. The howlings of the wolves now reached our ears; and the foxes, lynxes, cougars, bears, racoons, opossums and polecats, were seen sneaking off from the spot, whilst eagles and hawks, of different species, accompanied by a crowd of vultures, came to supplant them and enjoy their share of the spoil. It was then that the authors of all this devastation began their entry among the dead, the dying and the mangled. The pigeons were picked up and piled in heaps, until each had as many as he could possibly dispose of, when the hogs were let loose to feed on the remainder."—*Wilson's American Ornothology*, vol. iv., p. 319 of *Jameson's Edition.*

THE WAXWING.—In the 'Zoologist' for 1850 the details are given of five hundred and eighty-six of these birds killed in Great Britain in the winter of 1849-50, nearly all of them on our eastern coast: the direction of flight being westward is usual in their movements; but the time of year corresponds with neither the vernal nor autumnal migration: during the same winter Belgium, Holland and France were visited by immense flocks of the same species.

PALLAS' SAND GROUSE.—This bird is a native of Asia, more particularly of the Chinese Empire: as a British or even European bird it was unknown ten years ago. The following particulars are from the recently published edition of Montagu's 'Ornithological Dictionary.' The first record of the species visiting Britain was on the 9th of July, 1859, when a single specimen was killed at Tremadoc, in North Wales, and a second at Walpole St. Peter's, in Norfolk; and on the 23rd of the same month a third occurred at Hobro, in Jutland. An interval of three years elapsed before the bird was again observed, and then it made an invasion of Britain in force. Great pains have been taken in every part of the kingdom to transfer to the 'Zoologist' a record of every instance in which the bird was obtained or seen: their arrival on British soil seems to have commenced about the third week in May, and to have continued uninterrupted until the third week in June, when it ceased entirely: during this period about three hundred specimens were destroyed, and probably ten times that number observed. The birds seem to have arrived almost simultaneously at very distant and very opposite parts of the kingdom: we find them at Walney Island, off the west coast of Lancashire, on the 22nd of May, in Norfolk on the 23rd, at Aldershot, on the 26th, in Essex on the 27th, in Suffolk on the 28th, and again in Essex on the 29th: their flight was ever westward, but apparently without haste; they constantly alighted and ate the seeds of a number of our commonest plants. I have made out a list of thirty-one species which grew freely from the contents of the crops of specimens that were killed: all of these seeds are small, and the number requisite to fill the stomach of even a single bird is very large; so that it appears whenever they alighted they made free with the produce of the land, and evinced no inordinate haste to move forward. This exodus, like the others, knew of no return; and we may conclude that all the individuals which escaped our naturalists and our gamekeepers, succeeded in realizing the Atlantic ocean and perished in its waves.—*Montagu's Ornithological Dictionary, by Newman*, p. 141.

I will cite but one instance of this phenomenon in Quadrupeds:—

THE LEMMING.—Mr. Wood has summed up in a few brief sentences, which introduce rather than exhaust the subject, our very imperfect knowledge of the movements of the Lemming. He says,—"At uncertain and distant intervals of time, many of the northern parts of Europe, such as Lapland, Norway and Sweden, are subjected to a strange invasion. Hundreds of little dark mouse-like animals sweep over the land, like clouds of locusts suddenly changed into quadrupeds, coming from some unknown home and going no one knows whither. These creatures are the lemmings, and their sudden appearances are so entirely mysterious that the Norwegians look upon them as having been rained from the clouds upon the earth. Driven onwards by some overpowering instinct these vast hordes travel in a straight line, permitting nothing but a smooth perpendicular wall or rock to turn them from their course. If they should happen to meet with any living being, they immediately attack it, knowing no fear, but only urged by indiscriminate rage. Any river or lake they swim without hesitation, and rather seem to enjoy the water than fear it. If a stack or a corn-rick should stand in their way, they settle the matter by eating their way through it, and will not be diverted from their course even by fire: the country over which they pass is utterly devastated by them, and it said that cattle will not touch the grass on which a lemming has trodden. These migratory hosts are accompanied by clouds of predacious birds, and by many predacious quadrupeds, who find a continual feast spread for them as long as the lemmings are on their pilgrimage. While they are crossing the rivers and lakes, the fish come in for their share of the banquet, and make great havoc among their columns. It is a very remarkable fact that the reindeer is often seen to chase the lemmings, and the Norwegians say that the deer is in the habit of eating them. This statement seems, however, to be rather of doubtful character. The termination of these extraordinary migrations is generally the sea, when the survivors of the much reduced ranks finally perish. Mr. Lloyd mentions that just before his visit to Wermiland, the lemmings had overrun the whole country. The primary cause of these strange migrations is generally thought to be hunger. It is fortunate for the country that these razzias only occur at rare intervals, a space of ten to fifteen years generally elapsing between them, as if to fill up the places of those which were drowned or otherwise killed in the preceding migration." *Wood's Illustrated Natural History*, vol. i., p. 564.

The migrations of the rat (*Mus decumanus*) are still more wonderful: it came from the east, and having traversed Asia, Europe and America, seems like the Teuton to be seeking new worlds to conquer.

Of "Man and his Migrations" so much has been written, and so well, especially by my lamented relative Dr. Prichard and by Dr. Latham,—on whom the mantle of Prichard seems to have fallen,—that it would be almost an impertinence on my part to enter into farther details, and yet these phenomena are of such paramount interest that it would be inexcusable to pass them over in total silence. I will mention two instances only,—the Israelites and the Teutons,—because these papers already occupy too large a space in the monthly issues of this periodical, not because the subject can possibly be exhausted by any amount of illustration, or can possibly fail to interest those who have once given it a moment's consideration; for I hold with Akenside, as quoted by John Hunter, and again by Dr. Latham, that—

"The spacious West,
And all the teeming regions of the South,
Hold not a quarry, to the curious flight
Of knowledge half so tempting or so fair,
As Man to Man."

The Exodus of nations is not the work of a day; forty years were occupied in the transit of the Israelites from Egypt into Palestine, and this was not accomplished without strenuous resistance. The battle with Amalek which lasted until the going down of the sun; the driving out the Amorite, the Canaanite, the Hittite, the Perizzite, the Hivite and the Jebusite; the entire history of the wars of Joshua, show how great and how difficult was the enterprise undertaken by Moses of leading the Israelites into the promised land. There is a curious similitude and an equally curious contrast between the Exodus of the Israelites and that of the Teutons; the historian, in the first instance, was with the invaders in spirit as much as in body; in the latter case his presence and sympathies were with the invaded; the sympathies of the historian, in both instances, were with his people, and the sympathy of after ages has been with the historian: thus we all believe in the barbarism of the Amalekites and Hittites, and also in the barbarism of those eleven thousand knights in polished armour of chain-mail and crowned with burnished casques and flowing plumes, who, with a million of retainers, swept "a human deluge" over central Europe and devastated Italy. The similarity between the two invasions is to be found in this, that both the invaders when compared with the invaded were strangers to that luxury which steeps the soul of man in sin, and rots the immortal while it enfeebles the mortal ingredient of the compound man. The Exodus of the Israelites was from a land of bondage to a land of freedom; that of the Teuton from some region still unknown, to a land whose wealth and whose advantages had been for centuries on centuries a lure to attract the hardy, the adventurous, the ambitious, the covetous: both migrated towards a "promised land flowing with milk and honey." The Israelites threw themselves recklessly on the spears of the Amalekites, the Teutons on the swords of the Romans. I am well aware that Divine protection was constantly afforded to the former, and is supposed to have been denied to the latter; but here, as in so many other cases, the facts remain and cannot be disputed. The emperor Marcus Aurelius Claudius, in a report to the Roman Senate of the battle of Naissus, in which the Romans defeated a Gothic army three hundred thousand strong, declares that the slaughter was so prodigious that the rivers were filled with their shields, swords and lances, and the banks covered with these implements of war, and that the fields were hidden by the bones of horses and men. The followers of Attila, for years previous to the day when he stood on the once sacred soil of prostrate Rome, filled the rivers of Italy with his dead, and polluted the atmosphere with the stench of putrifying human flesh. The Allemanni, a name which some historians have derived from the words "All" "Men," from their immense numbers and various lineage, laid waste the north of Italy in the year 260, and reached Ravenna, but proceeded no farther: in the same year the Franks poured through France, crossed the Pyrenees, swept the whole of Spain, and, crossing at the straits of Gibraltar, carried their victorious arms into Africa, pursuing their course until there was nothing found to conquer or destroy.

Now it may be humbling, but it cannot be disputed, it cannot even be doubted, that these various and infinitely different beings—the ladybird, the ant, and the sawfly; the dragonfly and the froghopper; the pigeon and the waxwing; the sand grouse, the lemming, and the rat; Moses and Johshua, Attila and Odoacer, the enterprising Columbus and the peaceful Penn—have been mere helpless instruments in carrying out natural laws. It may seem too ridiculous to suggest such an association as this, but the similitude may be carried a great deal farther: the greatest discoverers, the greatest warriors, the greatest lawgivers, the greatest philosophers, are equally subject to the laws of birth, life and death, with the lady-bird, the plant-louse, or the lemming: there is an appointed groove in which all travel.

Strange as it may appear, this very restlessness may prove the salvation of species; this incomprehensible impulse, this blind obedience to seemingly destructive law, may become preservative. The Teuton, whose home is desolate or so obscure that we cannot find it, has found new worlds in which to reside and multiply. Great Britain, America, India, Australia and South Africa have become Teutonic: that which to our most imperfect vision appears a reckless rushing on destruction, has served to preserve a race while it destroys the units. The ants which form a bridge of their dead and drowning ones, that enables the living to cross waters they could not ford, act on a principle of sagacity,—aye, of Infinite Wisdom,—of which they could never have the most remote idea: the wisdom is not theirs.

EDWARD NEWMAN.

(To be continued.)

Curious Dentition in a Rabbit.—Having in my possession two rabbits of curious dentition, and supposing them of sufficient interest for insertion in the 'Zoologist,' I send them to you, accompanied with a photograph and outline drawings. No. 1 is a young rabbit shot in November in the neighbourhood of Torquay, and has three upper and the two lower incisors extraordinarily bent, and of the following uncommon lengths: the longest upper tooth is $\frac{5}{8}$ of an inch in length and has a groove running along the centre from root to tip; the two lower teeth are of equal length—above $\frac{1}{16}$ of an inch long; the lower jaw is contorted. The breadth of its lower teeth is equal, being $\frac{1}{8}$ of an inch at the base and tapering towards the point to half that breadth. No. 2, an adult rabbit, shot likewise near Torquay, was procured by me in the flesh (it seemed to have been shot at least four days before) on the 24th of December. Its two lower incisors are of regular formation, curve abruptly upwards, the left tooth slightly more than the right one, and are no less than 1½ inch in length: their breadth is uniformly ⅛ of an inch. Their tips are rather worn, as if by digging; they are ⅜ of an inch apart from each other, measuring from tip to tip. The upper incisors have nothing peculiar: part of its left ear is wanting.—*A. de Hügel; Torquay, May* 17, 1869.

Ornithological Notes from Stirlingshire.—March 6. Jack snipes still present in the marsh; I shot four to-day. Bean geese busy on the grass meadows in the Carse-land, low lying ground near the coast and around Grangemouth.

March 7. To-day heard, on reliable authority, that last year a pair of hen harriers bred in Stirlingshire, in a part which I have long considered abandoned by these birds: the gamekeeper shot the female bird and put his foot on the nest of eggs.

March 18. Otter trapped on the river.

March 22. Large flocks of golden plover coming inland, preparatory to breaking up for the breeding season.

March 31. Large colony of blackheaded gulls used to breed (as I am informed by an old "risidenter" in the parish of Kippen) on Flanders Moss, about ten miles west of Stirling, about thirty years ago. All left about that time, owing to the reclaiming of the Moss by the farmers: about that time also the colony, now breeding on the islands of Loch Lomond, first appeared there.

April 8. A song thrush has built its nest on the garden-seat close to where a blackbird reared its young in safety last year, as already accorded in the Zoologist. This nest, however, is not between the seat and the wall as the blackbird's was, but simply as it were lying on the seat; to-day there were three eggs in the nest, and the old bird was sitting on them.

April 16. A second otter trapped at the same place—a male, 20 lbs. weight. The toe-nails were worn off to the "quick" on three of the feet, by his endeavours to escape from the trap; left fore-foot nails perfect, that foot being the one in the trap.

April 18. First swallow seen by me, though a person told me he had seen two on the 12th.

April 22. First sandpipers seen on the river: they are wonderfully regular in their time of arrival here. Three pairs of kingfishers are breeding on the river banks this year.

During the month of May I was absent from home: on returning on June 8th heard that a Canada goose had been shot out of a flock of four, at Carron-dams, the day before; it is now at my birdstuffer's in Edinburgh. Two pied rooks were killed at our rookery this year,—young birds from the same nest, and killed by the same shot: large white patch on the throat, and the feet and bills even were partly white.—*John A. Harvie Brown; July* 1, 1869.

Tengmalm's Owl: correction of an Error.—I have just noticed a mistake in the 'Dictionary of British Birds,' relative to the birds of this county. The editor, quoting Mr. Hogg's 'Natural History of Stockton-on-Tees,' says that Tengmalm's owl breeds, or has bred, in Castle Eden Dene; but it was of the Scops eared owl that Mr. H. made this statement, which was most certainly an error, for I believe the Scops has never once been taken in Durham, though a single specimen of the Tengmalm's owl occurred in 1848.—*J. H. Gurney, jun.*

Flycatcher and Wren building their Nests together.—I saw this morning a very curious state of things at Swaysland's, viz., the nest of a wren with a flycatcher's built into and on the top of it. The wren had made its nest of shavings, leaves, &c., and, evidently before the nest was quite finished, a flycatcher commenced building at the top, not simply taking it for a foundation, but so interweaving the moss and hair as to present the appearance of one nest. When brought in from Preston, where it was found the night before, the flycatcher's contained four and the wren's three eggs; but from the appearance of the back of the nest, I believe the latter had more in it when taken down. The nests were built in an elm tree, at a knot in the stem, and were partially concealed by elm twigs.—*T. W. Wonfor; Brighton, July* 3, 1869.

Ring Ousel in Kensington Gardens.—Referring to the notice of the ring ousel shot at Muswell Hill, which appears in the 'Zoologist' for the present month, I may mention that on the 26th of November last I saw one of these birds in Kensington Gardens.—*T. Vaughan Roberts; St. Mildred's Court, Poultry, June* 14, 1869.

Golden Oriole at Scilly.—Our friends the orioles have made their appearance at Scilly again this season: one is in beatiful plumage, as bright as a marigold; the other, probably the female, in duller plumage. This species appears to be now a regular spring visitor to the Islands, in more or less numbers; but hitherto they have disappeared when the season for breeding advances, although to all appearances the birds have paired, and have been seen to frequent close plantations as if preparing for nesting.—*Edward Hearle Rodd; Penzance, May* 3, 1869.

Nightingale in Yorkshire.—I have great pleasure in recording the occurrence of the nightingale this season in Yorkshire. On the 13th of May one commenced singing in a small wood called Bushy Cliff, situate about five miles south-east of Leeds: it haunted some thorn bushes near a brook, and began to sing each evening about half-past ten, and continued in song till four in the morning. I, along with several others, walked about in the adjacent meadows most of the nights of the 15th and 16th listening to its charming music,—charming and rare, indeed, to Yorkshire men: the plaintive notes and the so-called water-bubble parts of its song were especially distinctive. I was somewhat surprised at its tameness: on the third evening many boys and young men from villages round about assembled and created some uproar without disturbing it from its perch, and the game-watchers got within a few yards of it. This tameness and indifference when singing is alluded to by various authors, and serves to distinguish it from all other nocturnal songsters. The highest parts of its song were plainly audible at three different villages on the west side of the wood in which it was located: I heard its notes distinctly when I was above a mile distant. Early in the morning of the 17th, four days after its appearance, it was captured with limed twigs by two Leeds bird-fanciers: a few meal-worms were thrown down among the twigs, and in less than five minutes after the bait was laid the bird was secured; greatly, I may add, to the mortification of hundreds who had listened to its surpassing song from their chamber windows. A friend of mine, who is an ornithologist in a small way, was present when it was caught, and saw that it *was* a nightingale. Before this occurrence I was amongst those who were sceptical about the nightingale being a Yorkshire bird, but now I am won entirely over to the other side. If the bird had not been caught there was sufficient evidence in the power and quality of its song, and in the peculiarity of its habits, to establish its identity. Mr. Kidd, I may just observe here, says that the nightingale is the easiest of all birds to catch. I believe the nightingale is known amongst the rude birdcatchers as the "red bird." Having seen doubts expressed in various naturalist journals by respectable ornithologists as to this bird's occurrence in Yorkshire, and having been hoaxed once or twice myself, I was induced to think that it was either entirely wanting or excessively rare. I believe my friend Mr. Ranson, of Linton-on-Ouse, has argued that it is not a Yorkshire bird: Colonel Newman has also disputed our claim to it (see Zool. for 1862, p. 7827). There need, however, be no doubt concerning its occurrence here in the centre of the county, as an irregular visitor. Our late illustrious neighbour, Mr. Waterton, has the following short but positive remark as a postscript in a letter to a friend, dated as recently as January, 1865: "Walton Hall is twelve miles south of Leeds, and the nightingale breeds here and sings here charmingly." This is good evidence, not only of its singing but of its breeding in this county. In an interesting ornithological letter to me, dated January, 1866, Mr. Horsfall, of Horsforth, says:—"The nightingale visits us, but only at intervals; I know of only four instances of its having done so in fifteen years." Mr. Hobkirk places the nightingale in his list of Huddersfield birds. ('Huddersfield; its History and Natural History,' p. 216). It also has a place in two manuscript lists of Yorkshire birds in my possession. Mr. Talbot, of Wakefiled, an experienced ornithologist, assures me that it appears regularly in the south of Yorkshire; indeed, with a little industry, evidence of its occurrence in this county might be accumulated sufficient to satisfy Pyrrho himself. It is thirty-two years since a nightingale was heard in song in this immediate neighbourhood.—*George Roberts; Lofthouse, Wakefield.*

Nest of the Redstart.—The nest of this bird (the most beautiful of our summer visitors) is generally placed in a hole; but this year I found one built on the branch of a trained pear-tree: the presence of the owners on and about the nest, its structure and the colour of the eggs, preclude any mistake. This is the first instance of a departure from the hole that has fallen under my notice: an old oologist, also, informs me that he never knew of such a situation being chosen.—*J. Ranson; York.*

Arrivals of Summer Migrants near York.—Spotted Flycatcher (called in North Yorkshire the "Wall-chat"), May 10. Redstart ("Jenny wrentail"), April 28. On this date the male and female were first seen by me, but, as they had chosen a nesting-place and began to build, it is probable they might have been about nearly a week. Arrival in 1865, April 27; 1866, April 14; 1867, April 25; 1868, April 28.—*Id.*

A Dartford Warbler's Nest with five Eggs.—As is well known the rule with the Dartford Warbler is to lay four eggs, and some affirm they are never found with five: be that as it may, a nest containing five eggs was taken by Swaysland and his wife on the Downs, on June 25th. Since April they have taken seventeen nests, one of which had three, one five, and all the rest four eggs, in obtaining which they have spent days in observing the habits of the birds. I saw in one box thirteen nests, twelve of which contained four eggs each, and the thirteenth five eggs; and although there was great dissimilarity in the markings and outline, when nest with nest were compared, the eggs in each nest were similar.—*T. W. Wonfor; Brighton.*

The Redpole building in Brighton.—A redpole built its nest in a garden about 100 yards from Montpelier Crescent, in a willow close to a public path: the nest, containing five eggs, was taken. Nine days after another nest, built by the same birds and containing five eggs, was taken in an elder growing close by the willow: in the latter case, the nest was chiefly made of cotton from the willow.—*Id.*

Blue Tit's Nest inside a Thrush's Nest.—Examined on the 23rd May a blue tit's nest, containing nine eggs, built inside a thrush's nest in the top of a small fir: the nest was cup-shaped, and the remainder of the thrush's nest was filled up with rubbish, a cavity probably having been left, in which the blue tit had built: she flew off the nest the instant I touched the tree. I am unaware if the thrush's nest was one of this year.—*John P. Thomasson; Moorfield, Bolton.*

Martins and Swallows.—It may be interesting to your readers to know that on the morning of Thursday, the 27th ult., I found dead, under my southern windows, seven house-martins, and another on the following day in an out-house. On Monday, the 24th, it was close and thundery, and there was abundance of insect life, especially about the Trent, where the martins and swallows were very actively employed. Tuesday was cooler and also thundery, and heavy storms passed over Rugely and Stafford. Wednesday the wind blew cold and strong from the north, and such martins as were on the wing had much ado to find food or to hold their way on the lee side of two large elms in my garden. Many of the poor birds, too, hovered round myself in remarkable proximity, and it would have been easy to knock them over with the hand. On looking up at the steep roof of my vicarage at mid-day, I observed that it was *speckled* with scores and scores of martins clustered thickly together. On the following morning eight of the birds lay dead on the gravel-walk, and those that remained on the roof above were huddled still more closely together close to the stack of chimneys. The next day (Friday) few were to be seen anywhere here; more are about now, but still few in comparison with the numbers to be seen in the earlier part of last month. Swallows and swifts are still abundant.—*W. H. Walsh; Abrewas Vicarage, South Staffordshire, May* 5, 1869.

Cuckoo in the City.—On the morning of June 11th, when walking down Camomile Street, Bishopsgate Street, about half-past seven o'clock, a bird flew round and settled for a few minutes on the top of a warehouse, which gave me a good opportunity to determine the bird to be a cuckoo. Judging from the size it was a female, but the colour of the plumage was browner than is usual at this time of year.—*A. H. Smee; June* 16, 1869.

Dotterel near Weston.—We have had a small flock of the dotterel (*C. morinellus*) in this neighbourhood. One was shot in the Steep Holm in the Bristol Channel about the first of this month, and others were seen on the coast near this town.—*Rev. M. A. Mathew; Weston-super Mare, May* 15, 1869.

Blacktailed Godwit at Hickling.—I have in the flesh a blacktailed godwit, which was shot at Hickling, in Norfolk, on the 1st of May, and for which I am indebted to Mr. Gunn.—*J. H. Gurney, jun.; Bank, Darlington, May* 3, 1869.

Night Herons in Cornwall.—A few days since a male and female night heron were shot near Hayle, on our north coast: they are both well-plumaged birds, with three occipital plumes; the female is a little duller in plumage than the male, but in other respects very similar in plumage. The ovary contained eggs, some about the size of a small bean. The male bird was observed on a piece of marshy ground, stalking about with a flock of geese; the female was observed on a tree, and apparently resting on her breast, as her legs were observed hanging down.—*Edward Hearle Rodd; Penzance, May* 12, 1869.

Night Heron in Devonshire.—My brother (Lieut. W. C. Mathew, 81st Regiment) was taking a walk the day before yesterday on the banks of the Taw, and when about two miles above Barnstaple he noticed a strange bird sitting on the lower branch of an alder bush overhanging the river. On approaching nearer the bird flew off, and my brother at once knew it was something uncommon; and as it pitched again within a short distance, he went to a neighbouring cottage and borrowed a gun, with which he was lucky enough to bring it down: it proved to be a magnificent male specimen of the above species in full breeding plumage, and was beautifully shot. It is now in the hands of Mr. E. Ward, of 60, Wigmore Street, who I dare say will be happy to show it to any one wishing to see it.—*Gervase F. Mathew, R.N., F.L.S.; Barnstaple, May* 16, 1869.

Crane at Lynn.—On Friday, the 4th June, a specimen of the crane (*Grus cinerea*), which is a very rare bird in this country,—only a few instances being on record of its capture in Norfolk,—was shot on the South Pickenham estate by John Hubbard, gamekeeper to E. A. Applewhaite, Esq.

Crane at Tewkesbury.—On the 22nd of May I received, in the flesh, a young male crane, which had been shot on the 17th by Mr. Joseph Smith, at Fiddrington, near Tewkesbury.—*J. H. Gurney, jun.; Bank, Darlington.*

Crane at Wareham.—On May 18th, we received from Wareham an adult female of the common crane (*Grus cinerea*).—*William Hart; Christchurch.*

Cranes in Norfolk.—If your correspondent "Grus" (Burnham), who announced in last week's 'Field' the occurrence of four cranes at Burnham, Norfolk, would kindly forward me any further particulars respecting them to 10, Unthank's Road, Norwich, I should feel greatly obliged. I should be glad to know the age and sex, if ascertained, of the birds shot, and what has since become of them; also, if noticed, the contents of their stomachs. On the 7th of May two cranes were seen, and one, a young male, was shot in a barley layer at East Somerton, near Yarmouth. On the 25th of May another was shot and winged in the Saltmarshes at Thornham, near Lynn, and was kept in confinement till the 5th inst., when it died. Again, on the 4th inst., another young male was shot at South Pickenham, near Swaffham, which, with the Burnham ones, were probably members of one flock dispersed over that part of the country. The occurrence of so many of these rare visitants in one season is the more remarkable, as I am not aware of more than four examples having been killed in Norfolk during the last half century.—*H. Stevenson; Norwich, June* 15, 1869 (*Field*).

Little Gull.—A very pretty example of this species was picked up dead at Braunton last January, and has been preserved by the bird-stuffer of this town, who thought it was some species of tern.—*G. F. Mathew.*

Note on the Nest of Podiceps minor.—Never having seen the nest of the little grebe, I was very glad to avail myself of the opportunity of inspecting three, which offered itself on the occasion of a recent visit to Scoulton Mere. The first nest found contained no eggs, and had probably been robbed; the second contained two eggs, one fresh laid and quite unstained; the third, six eggs slightly incubated: all the nests were built just within the margin of the reeds which bordered one part of the island—not so far in as to be out of sight, and where the reeds grew sufficiently far apart to allow of the birds diving away from the nests without offering any impediment. They were composed, in each instance, of the dead leaves of the common reed (*Phragmites communis*), and at first sight presented the appearance of a small heap of wet and almost rotten vegetable matter, raised from four to six inches above the surface of the water. The two nests containing eggs were each covered over with the same material as the birds had used in constructing them, the eggs being perfectly hidden under a layer of dead leaves, so arranged as to present the appearance of having been accidentally accumulated: the quantity was considerable, enough to cover the eggs to the depth of at least an inch. I regretted not being able to watch the birds in order to ascertain the mode in which this covering is placed on the nest; the time required by the birds to make the arrangement; and how it is disposed of when she is setting. No green materials were used in constructing these nests, as was the case in a very beautiful nest of the coot close by, in which the inside was composed of dead rushes (I think Typha latifolia), the outside having green leaves of the same plant plaited amongst them—the whole structure, beautifully neat and compact, presenting a complete contrast to the nest of the little grebe. On looking at these wet and dirty structures one cannot help wondering how the necessary heat is maintained to bring the eggs to maturity.—*Thomas Southwell; Norwich, May* 29, 1869.

PROCEEDINGS OF SOCIETIES.

ENTOMOLOGICAL SOCIETY.

June 7, 1869.—H. W. BATES, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 111; presented by the Society. 'Proceedings of the Zoological Society,' 1868, Part 3; by the Society. 'Horæ Societatis Entomologicæ Rossicæ,' Vol. vi., No. 2; by the Society. 'Berliner Entomologische Zeitschrift, 1868, Parts 3, 4,—1869, Parts 1, 2; and 'Verzeichniss der Käfer Deutschlands,' von Dr. Kraatz; by the Entomological Society of Berlin. 'Illustrations of Diurnal Lepidoptera, Part IV., Lycænidæ'; by the Author, W. C. Hewitson, Esq. H. de Saussure, 'Reise der Oest. Fregatte Novara, Hymenoptera;' 'Etudes sur quelques Orthoptères du Musée de Genève;' 'Etudes sur l'Aile des Orthoptères;' 'Orthopterum Species novæ aliquot;' 'Phasmidarum novorum Species nonnullæ;' and Prof. Yersin, 'Note sur la dernière Mue des Orthoptères;' 'Note sur les Mues du Grillon champêtre;' 'Note sur le Xiphidium brunneum;' presented by Sir John Lubbock. 'The Zoologist,' for June; by the Editor. 'The Entomologist's Monthly Magazine,' for June; by the Editors.

The following addition by purchase was also announced:—'Récherches sur la Faune de Madagascar: Insectes,' par S. C. Snellen van Vollenhoven et Baron Edm. de Sélys Longchamps.

Exhibitions, &c.

Mr. Druce exhibited a collection of butterflies from Borneo, containing several novelties and rarities; amongst them a new Ornithoptera, a rare Charaxes, &c.

Mr. Stainton exhibited two specimens of a new species of Tineina, bred from larvæ sent by M. Millière, who found them at Cannes on Osiris alba. The bushy tufted palpi of the insect resembled those of Anarsia, and its habit was to sit with its head depressed as if resting on the palpi; the markings of the wings were like Zelleria or Swammerdamia. Mr. Stainton had seen the moth at Vienna and in other Continental collections, but the discovery of its habits and transformations was due to M. Millière, who proposed to describe it under the name of Paradoxus (n. g.) Osiridellus.

Mr. Stainton also exhibited drawings of the larva and pupa-case of Gelechia atrella, and was now able to corroborate the observation of Mr. Jeffrey (see Proc. Ent. Soc. 1866, p. xxv.) that this species is a Hypericum feeder. At the previous meeting of the Society, Mr. De Grey had given Mr. Stainton some Hypericum stems containing larvæ, which had since produced Gelechia atrella; when full fed, the larva cuts off the terminal portion of the stem, which appears to be slit up the side for the purpose of flattening it, and by spinning together the edges it forms a flexible case, within which it turns to the pupa.

Mr. F. Smith exhibited a bee which he had found on the previous day at Southend, in grass, so completely covered with larvæ of Meloe that it was impossible to determine the species of the bee until the greater part of the parasites had been removed; he did not remember to have ever found larvæ of Meloe so late in the season; there were forty or fifty of them on the bee when exhibited, when captured there must have been 300 or 400; the bee proved to be Melecta armata, itself a parasite in the nests of Anthophora.

Mr. F. Smith exhibited living specimens of Physonota gigantea, a remarkably beautiful species of Cassididæ, which however loses all its colour within two or three days after death, indeed some of them had faded and become dull during life; they were brought to Liverpool from Central America in a cargo of logwood, and were said to have dropped out of the cracks of the wood.

Mr. F. Smith exhibited a smooth corneous luminous larvæ from Uruguay, which he supposed to be a Pyrophorus. When placed in a dark room, the head appeared bright red, and each side showed ten bright green spots; the lateral spots were almost always visible (in the dark), the red only occasionally, and sometimes would remain invisible for ten minutes together; the colours were so intense that Mr. Smith compared them to the red and green signal-lamps of a railway train. It was said by the sender to be capable of living for two or three months without food, if placed in earth which was kept damp and occasionally changed.

Mr. Pascoe exhibited a beetle* brought by Mr. Du Boulay from West Australia, which possessed a very peculiar formation of the elytra with remarkable elevations on the hind part thereof, and which seemed intermediate between Hister and Claviger.

Prof. Westwood exhibited drawings of two new species of the Ectrephes of Pascoe (Proc. Ent. Soc. 1866, p. xvi. = Anapestus of King, in Trans. Ent. Soc. N.S.W. for the same year), which genus he now considered to be a strangely modified form of Ptinidæ; and of some other forms (Polyplocotes, n. g., &c.) which connected Ectrephes and Ptinus. Also, a new Articerus, a new Paussus, &c.

The Secretary read a letter from the Secretary of the Flax Improvement Association of Belfast, respecting the damage done by a small beetle to the flax crop, especially whilst the plant was in the seed-leaf. The species was determined by Mr. Janson to be the Thyamis parvula of Paykull.

Papers read.

The following papers were read:—

"Notes on Eastern Butterflies" (continuation, Eurytelidæ and Libytheidæ); by Mr. Alfred R. Wallace.

---

* The *Chlamydopsis striatella* of Westwood, Tr. Ent. Soc. 1869, p. 318.

"Observations on Lucanoid Coleoptera; with Remarks on some new Species, and on the present Nomenclature; accompanied by a Revised Catalogue of the Species," by Major Parry. (First Part).

"Remarks on the Genus Ectrephes, and Descriptions of new Exotic Coleoptera," by Prof. Westwood.

"Notes on Chalcididæ; and description of a new Species of Megastigmus," by Mr. Francis Walker.

"Descriptions of new Species of the Genus Pison; and a Synonymic List of those previously described," by Mr. Frederick Smith.

"Descriptions of new Genera and Species of Exotic Hymenoptera," by Mr. F. Smith.

New Part of 'Transactions.'

The second part of the 'Transactions' for 1869 (published in May) was on the table.

July 5, 1869.—FREDERICK SMITH, Esq., Vice-President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Transactions of the Linnean Society,' Vol. xxvi., Pt. 3; presented by the Society. 'Stettiner Entomologische Zeitung,' 1869, Nos. 1—6; by the Entom. Soc. of Stettin. 'Proceedings of the Royal Society,' No. 112; by the Society. Butler's 'Lepidoptera Exotica,' Pt. 1; by E. W. Janson, Esq. 'Descriptions of new Genera and Species of Tenebrionidæ from Australia and Tasmania,' by F. P. Pascoe; by the Author. 'The Zoologist,' for July; by the Editor. 'The Entomologist's Monthly Magazine,' for July; by the Editors.

The following additions by purchase were also announced:—Thomson, 'Skandinaviens Coleoptera,' Vol. ix. Gemminger and von Harold, 'Catalogus Coleopterorum,' Vol. iv.

Election of Member.

Albert Müller, Esq., of Eton Villa, Sunny Bank Road, South Norwood, was ballotted for and elected a Member.

Exhibitions, &c.

Mr. J. Jenner Weir exhibited a gigantic tick, nearly an inch in length, and half an inch in breadth: it was found on a Greek tortoise.

Mr. Colvile Barclay (who was present as a Visitor) gave an account of the damage done to the sugar cane in Mauritius by a species of Coccus, the "pou à poche blanche," or "pou blanc." See Proc. Ent. Soc. 1864, pp. 25, 51.

Mr. Frederick Smith exhibited drawings of the luminous larva shown at the previous Meeting (*ante*, p. xv.), and supposed to be a Pyrophorus. Dr. Candèze and Prof. Schiödte (who was present as a Visitor) were both of opinion that the larva belonged to the Elateridæ, and were equally of opinion that Mr. Andrew Murray's Astraptor illuminator (Journ. Linn. Soc. Zool., vol. x., p. 74, pl. i.) was not an Elater.

Mr. F. Smith exhibited a living male of the field cricket, Acheta campestris, found near Farnham; and remarked that though he required to be placed in the sun to make him begin his song, moisture seemed to give him an additional stimulus and made him sing the louder.

Mr. F. Smith also exhibited specimens, some of them alive, of Pissodes notatus, from Bournemouth, showing great variation in size.

Mr. Pryer exhibited a specimen of Eupithecia togata, taken in the previous month; the occurrence of the species in this country had not been recorded for some years. The locality was not stated. Mr. Dunning mentioned that he had taken the insect at Brandon, Suffolk, in 1849.

The Hon. T. De Grey exhibited three specimens of Cosmopteryx orichalcea, from Wicken Fen, Cambridgeshire; and six of what Prof. Zeller held to be a dark variety of Carpocapsa Juliana, though they were (part of a larger number) bred from beech in April.

Mr. Wakefield (who was present as a Visitor) stated the result of his entomological experience in New Zealand, apologising for the scantiness of his information on the ground that the whole of his collections had perished in the burning of the ship "Blue Jacket." As in mammals and birds, so in insects, there seemed a paucity both of species and specimens, and a poverty of appearance about the few that did occur. Mr. Fereday had not been able to get together more than fourteen or fifteen species of butterflies, and 250 of moths. Mr. Wakefield himself had obtained perhaps 120 species of Coleoptera, thirty or forty of Hymenoptera, and about 150 of Diptera. There was generally a close similarity to British species, but usually of an impoverished and inferior type. He had taken a clear-wing moth which he believed to be absolutely identical with Trochilium tipuliforme, but this species had probably been imported into New Zealand with currant bushes.

The Secretary read a letter from Mr. C. A. Wilson, Corresponding Member, dated "Adelaide, 21st April, 1869." The following are extracts:—

"MYRMELEONIDÆ.—We have had for some years past about seven known species of Myrmeleon and the same number of Ascalaphus, with few exceptions all found near Adelaide, though the greater part in each genus are very rare or scarce in individuals. These have long, doubtless, been named in English Museums, but we have not the names out here. All these insects are very fond of settling on the wire fences now used with post and rail all over the country for fencing; the size of the wire seeming to suit the grasp of their feet as well or better than a twig might do, and where they can rest undisturbed either by adjacent twigs or the motion of the object grasped. The species of Myrmeleonidæ lie with all their limbs flat along the wires, looking at a little distance merely like a gradual thickening and then decreasing of the metal, acting with their motionless habits and grayish colour quite as a passive means of defence by deception, one of the many ways in our insect world out here, in which they have "protective resemblances." Our common Ascalaphus while on the wing flies like the Myrmeleons, heavily or lazily, and soon settles, but places itself in a very different attitude,—it may be also a deceiving one: after the legs are arranged, its antennæ are stuck out straight before it, the knobs resting on or a little raised from the wire, but the abdomen is raised pointing upwards at an angle of 45°. All that I have seen in this position (as many as nine in a day) seem to have been females. The morning is the best time to see them, as, if the wires afterwards become hot in the December sun, the Ascalaphi soon disappear; they are also quite motionless in this singular position, but apparently on the watch, as they can mostly, though not always be taken by a guarded motion of finger and thumb.

"MASON WASPS.—In the month of December I took my usual annual walk to a celebrated insect locality in the Mount Lofty range of hills N.E. of Adelaide, about six miles up a gully called Stewart's Gully...... 'Whiz' came by a wasp with purple and yellow body [specimen enclosed; pronounced by Mr. Frederick Smith to be Paragia tricolor]. It hovered over the ground for a few minutes, and then went prone to earth and disappeared; on looking about I found a little chimney made of earth, down which the wasp had evidently gone: this structure was about half an inch in height and one-third of an inch in the diameter of its opening at the top, straight down the sides, and placed over a hole of the same size. With slight pressure, and without breaking it, I removed the chimney; and then its use became apparent, for, moved by the "gully breezes," little stones and bits of leaf came rolling down the incline, and several tumbled into the unprotected hole. I watched for a few minutes, but the tenant did not come out; and as I turned away, up flew another wasp of the same species, and at once went down another chimney but a few feet off, and which, from its similarity to the earth and stones around, I only discovered by this means. Presently a louder whizzing noise, and swiftly came two more wasps together: one of these seemed frightened and flew off for a time, but the other made great sweeps to and fro; I observed the object *aimed at*, and quickly removed the little structure before the builder in one of its curves came round again,—then, without hesitation, pausing, or being puzzled, it went directly down the uncovered hole, I must say much to my surprise. I likewise took the chimney of a fifth wasp (which came soon afterwards), after it had gone below. These little buildings were all removed entire, but easily broke afterwards, having no hold on anything and the sides being very thin; meantime the first seen wasp had emerged from its cell, as it now returned and went below a second time. I did not observe that any of these (I concluded all to be females) carried any caterpillars or other food to their young (if any) in these subterranean dwellings,—perhaps the eggs were not laid or the young yet emerged: all these five domiciles were within a few feet of each other, and full six feet from the last was a sixth chimney, but the owner was not visible. These insects can, therefore, hardly be called gregarious, but had (as in the case of the holes made by the females of several of our Mutillidæ) merely placed their dwellings thus contiguous, the situation being most suitable, and perhaps from a little desire for companionship: these holes might also serve in future seasons for the young broods, and increase in numbers."

1 DE69

Papers read.

The following papers were read:—

"Notes on Eastern Butterflies" (continuation); by Mr. Alfred R. Wallace.

"On the Australian Species of Tetracha;" by Mr. Edwin Brown.

New Part of 'Transactions.'

Part 3 of the "Transactions for 1869," containing the conclusion of Dr. Sharp's Revision of the British Species of Homalota, published in June, was on the table.

e
s
s

CONTENTS.

Two Tiger Stories and one Elephant Story, *R. Thompson*, 1769.
Extracts from the Report of the Council of the Zoological Society, 1775.
Death of Species, *Edward Newman*, 1784.

QUADRUPED.—Curious Dentition in a Rabbit, *A. de Hügel*, 1798.

BIRDS.—Ornithological Notes from Stirlingshire, *John A. Harvie Brown*, 1799. Tengmalm's Owl, *J. H. Gurney, jun.*, 1799. Flycatcher and Wren building their Nests together, *T. W. Wonfor*, 1799. Ring Ousel in Kensington Gardens, *T. Vaughan Roberts*, 1800. Golden Oriole at Scilly, *Edward Hearle Rodd*, 1800. Nightingale in Yorkshire, *George Roberts*, 1800. Nest of the Redstart; Arrivals of Summer Migrants near York, *J. Ranson*, 1801. A Dartford Warbler's Nest with five Eggs; The Redpole building in Brighton, *T. W. Wonfor*, 1801. Blue Tit's Nest inside a Thrush's Nest, *John P. Thomasson*, 1802. Martins and Swallows, *W. H. Walsh*, 1802. Cuckoo in the City, *A. H. Smee*, 1802. Dotterel near Weston, *M. A. Mathew*, 1802. Blacktailed Godwit at Hickling, *J. H. Gurney, jun.*, 1802. Night Herons in Cornwall, *Edward Hearle Rodd*, 1802. Night Heron in Devonshire, *Gervase F. Mathew, R.N., F.L.S.*, 1802. Crane at Lynn, 1803. Crane at Tewkesbury, *J. H. Gurney, jun.*, 1803. Crane at Wareham, *William Hart*, 1803. Cranes in Norfolk, *H. Stevenson*, 1803. Little Gull, *G. F. Mathew*, 1803. Note on the Nest of Podiceps minor, *Thomas Southwell*, 1803.

PROCEEDINGS OF SOCIETIES.—Entomological Society, 1804.

TO CORRESPONDENTS.

Papers with the following signatures still stand over:—J. Watson, J. H. Gurney, Thomas Boynton, T. E. Gunn, J. A. Clark, Cecil Smith, Charles Horne, J. E. Harting, Sir Oswald Mosley, George Roberts, W. W. Verner, Henry Moncreaff, Anatole de Hügel, Edward Sweetapple, Albert Müller, Charles E. Stubbs, R. M. Barrington, H. Bloomfield, J. H. Gurney, jun.; and also my Collected Observations of British Reptiles (article toad). I have to express my very sincere regret for the delay in many of these cases, but I now promise that the whole of them shall take precedence of any communications received during the present month.—*E. N.*

EDWARD NEWMAN'S ILLUSTRATED NATURAL HISTORY of BRITISH MOTHS.

The entire Work is published, as already advertised, at Twenty Shillings; in a handsome cloth binding. It contains life-size and most accurate figures of Seven Hundred and Thirty Moths that have been discovered in Britain.

EDWARD NEWMAN, 9, Devonshire Street, Bishopsgate.

PROFESSOR NEWTON'S SUGGESTIONS FOR FORMING COLLECTIONS OF BIRDS' EGGS. Price Sevenpence, post free.

⁂ This Work contains detailed directions for egg blowing, especially those that have been hard sat on, and figures of the instruments to be used.

SIMPKIN, MARSHALL & Co., Stationer's Hall Court.

On the 1st of every Month, price Sixpence,

THE ENTOMOLOGIST: a medium of communication and exchange among Collectors of Insects.

SIMPKIN, MARSHALL & Co., Stationer's Hall Court.

E. NEWMAN, PRINTER, 9, DEVONSHIRE STREET, BISHOPSGATE.